



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,300	03/19/2004	Michael Rosenstein	6296 C1/CPI/L/B/PJS	7840
44257	7590	09/07/2006		
PATTERSON & SHERIDAN, LLP 3040 POST OAK BOULEVARD, SUITE 1500 HOUSTON, TX 77056			EXAMINER MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 09/07/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/804,300

Applicant(s)

ROSENSTEIN ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-18 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Terminal Disclaimer***

1. The terminal disclaimer filed on 19 June 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of the full statutory term of prior patent No. 6,776,878 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,565,662 to Amano et al.

4. Amano et al. disclose a semiconductor processing chamber comprising: a vacuum chamber body having an open upper end (61); a hinge (63) coupled to the chamber body and having a fixed axis of rotation relative to the chamber body; a lid assembly (62) coupled to the chamber body by the hinge, the lid assembly rotatable about the fixed axis of rotation of the hinge between a first position sealing the open upper end and a second position clear of the upper end; and a motor (column 5, rows 55-61) coupled to the hinge assembly for moving the lid assembly between at least the first position and the second position.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. as applied to claims 1 and 16 above, in view of U.S. Patent No. 6,469,448 to Taguchi et al. and U.S. Patent No. 6,042,707 to Moleshi et al.

8. Amano et al. disclose the invention substantially as claimed and as described above.

9. However, Amano et al. fail to teach the lid comprising a target and a magnetron.

10. Taguchi et al. disclose mounting a target to a chamber lid for the purpose of carrying out a sputtering reaction using a magnetron, with the wafer mounted opposite on a wafer holder (column 1, rows 34-43).

11. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target and a magnetron for sputtering the target mounted to a chamber lid with the wafer disposed opposite in Amano et al. in order to carry out a sputtering process as Taught by Taguchi et al.

Art Unit: 1763

12. However, Amano et al. and Taguchi et al. fail to teach the lid comprising a magnetron for providing electrical energy and regulating erosion of the target during sputtering operations

13. Moleshi et al. teach the use of a magnetron during sputtering operations for the purpose (column 5, rows 23-25).

14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a magnetron in Amano et al. and Taguchi et al. in order to provide electrical energy and regulate erosion of the target during sputtering operations as taught by Moleshi et al.

15. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,731,678 to Zila et al. in view of U.S. Patent No. 6,469,448 to Taguchi et al.

16. Zila et al. disclose a semiconductor processing chamber substantially as claimed and comprising: a chamber body having sidewalls and a bottom (column 6, rows 19-21) defining an interior volume; a lid assembly (Figure 4, 406) coupled to the chamber body (using the below hinge assembly) and movable between a first position enclosing the interior volume and a second position; a hinge assembly (Figure 4, multiple part numbers, 405 & 407) coupled between the lid assembly and the chamber body and having a fixed axis of rotation relative to the chamber body (412); and a motor (Figure 13, 428; column 7, rows 33-36 and Figure 14, 452; column 9, rows 25-33) coupled to the hinge assembly for moving the lid assembly between at least the first position and the second position. The lid assembly rotatable about a fixed axis of the hinge (412) between a first position sealing the open upper end and a second position clear of the upper end.

17. However, Zila et al. fail to teach the processing chamber as a vacuum chamber.

18. In a semiconductor processing chamber, Taguchi et al. teach the use of a vacuum processing chamber for the purpose of setting the processing pressure to an optional, predetermined value (column 1, rows 29-31, 54-55 and column 3, rows 55-61).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a vacuum processing chamber in Zila et al. in order to set the processing pressure to an optional predetermined value as taught by Taguchi et al.

20. With respect to claim 2, the hinge assembly of Zila et al. further comprises one or more mounting brackets (407) coupled to the lid assembly; a shaft (Figures 9 and 13, 429, 430 and 432) mounted to the mounting brackets; one or more bearing mounts (Figures 9 and 13, 424 and 441) rotatably coupled to the shaft.

21. With respect to claim 3, the motor of Zila et al. is coupled to the shaft (Figure 13, 428; column 7, rows 33-36 and Figure 14, 452; column 9, rows 25-33).

22. With respect to claim 5, the bearing mounts of Zila et al. are coupled to the chamber body via operator base (405) of the hinge assembly.

23. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zila et al. and Taguchi et al. as applied to claims 1-3 and 5 above, and further in view U.S. Patent No. 6,042,707 to Moleshi et al.

24. Zila et al. and Taguchi et al. disclose the invention substantially as claimed and as described above.

25. However, Zila et al. fail to teach a target of material for physical vapor deposition coupled to the bottom of the lid.

26. Taguchi et al. further disclose mounting a target to a chamber lid for the purpose of carrying out a sputtering reaction, with the wafer mounted opposite on a wafer holder (column 1, rows 34-43).

27. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target mounted to a chamber lid with the wafer disposed opposite in Zila et al. in order to carry out a sputtering process as taught by Taguchi et al.

28. Zila et al. and Taguchi et al. disclose the invention substantially as claimed and as described above.

29. However, Zila et al. and Taguchi et al. fail to teach the lid comprising a magnetron for providing electrical energy and regulating erosion of the target during sputtering operations

Art Unit: 1763

30. Moleshi et al. teach the use of a magnetron during sputtering operations for the purpose (column 5, rows 23-25).

31. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a magnetron Zila et al. and Taguchi et al. order to provide electrical energy and regulate erosion of the target during sputtering operations as taught by Moleshi et al.

32. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,731,678 to Zila et al. in view of U.S. Patent No. 6,469,448 to Taguchi et al.

33. Zila disclose the apparatus substantially as claimed and comprising: a chamber body having sidewalls and a bottom (column 6, rows 19-21) defining an interior volume, a lid assembly (Figure 4, 406) coupled to the chamber body (using the below hinge assembly) and having a bottom movable between a first position enclosing the interior volume and a second position; a hinge assembly (Figure 4, multiple part numbers, 405 & 407) coupled between the lid assembly and the chamber body; a first mounting bracket coupled to the lid assembly (407); one or more bearing mounts rotatably coupled to the chamber body; a shaft (Figures 9 and 13, 429, 430 and 432) having a fixed position relative to the chamber body (when closed) and lid assembly, the shaft coupled to the first mounting bracket and rotatably disposed through the bearing mounts; and a motor (Figure 13, 428; column 7, rows 33-36 and Figure 14, 452; column 9, rows 25-33) coupled to at least one of the shaft or first mounting bracket for moving the lid assembly between at least the first position and the second position.

34. However, Zila et al. fail to teach a target of material for physical vapor deposition coupled to the bottom of the lid.

35. Taguchi et al. disclose mounting a target to a chamber lid for the purpose of carrying out a sputtering reaction, with the wafer mounted opposite on a wafer holder (column 1, rows 34-43),

36. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a target on a mounted to a chamber lid with the wafer disposed opposite in order to carry out a sputtering process as taught by Taguchi et al.

Art Unit: 1763

37. Claims 12, 13 and 15 and 18 are rejected under 35 U.S.C, 103(a) as being unpatentable over Zila et al. and Taguchi et al. as applied to claim 11 above, and further in view of U.S. Patent No. 6,198,299 to Hollman and U.S. Patent No. 4,416,102 to Peters.

38. Zila et al. and Taguchi et al. disclose the invention substantially as claimed and as described above.

39. However, Zila et al. and Taguchi et al. fail to a first bushing having a c-shaped cross section disposed in the chamber body and a first pin disposed between the lid assembly and the chamber body wherein a portion of the first pin mates in the first bushing.

40. Hollman teach the use of appropriately placed pins and bushings for the purpose of aligning a chamber with a cover (column 5, rows 9-14).

41. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided appropriately placed pins and bushings in Zila et al. and Taguchi et al. in order to properly align the chamber with the lid as taught by Hollman.

42. Zila et al., Taguchi et al., and Hollman disclose the invention substantially as claimed and as described above.

43. However, the prior art fails to teach the bushing having a c-shaped cross section.

44. Peters teach the use of a bushing with a c-shaped cross section for the purpose of allowing expansion of the bushing and subsequent locking of bushing in a proper placement (column 7, rows 13-20).

45. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a c-shaped bushing Zila et al., Taguchi et al., and Hollman in order to allow for expansion of the bushing and subsequent locking of the bushing as taught by Peters.

46. With respect to claim 13, Holloman and Peters fairly teach using a locating pin and a bushing for the purpose of proper alignment.

47. However, a plurality of locating pins and bushings is not explicitly taught.



Art Unit: 1763

48. It would have been obvious to provide additional locating pins and bushings for the same purpose. The courts have ruled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

49. With respect to claim 15, Zila discloses a mounting bracket.

50. However, a plurality of mounting brackets is not explicitly taught.

51. It would have been obvious to provide additional mounting brackets for the same purpose disclosed in Zila. It would have been further obvious to one of ordinary skill in the art that if a plurality of mounting brackets (each for the same purpose) were provided that a brace could be used to connect them for enhanced stabilization. The courts have ruled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

52. Limitations of claim 18 are described above. Additionally, the shaft has an axis of rotation relative to the chamber body (column 8, rows 35-44).

#### ***Allowable Subject Matter***

53. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

54. The prior art of record fails to teach or fairly suggest: a shaft as recited in independent claim 11 further being coplanar with the upper surface of the main body. No other prior art was found that provided a valid motivation for incorporating this feature into the claimed invention.

#### ***Response to Arguments***

55. Claims 1 and 16

56. Applicant's arguments filed have been fully considered but they are not persuasive. Examiner disagrees with Applicant's characterization of the apparatus of Amano. Contrary to Applicants characterization, the apparatus does have a fixed axis of rotation relative to the chamber body and

Art Unit: 1763

located outward of the chamber body. Examiner notes that the claims do not claim a fixed hinge, but a fixed axis of rotation. Rotation about the claimed axis happens at a single fixed position and thus meets the claim language.

57. Examiner has assumed that the language of claims 1 and 16 dealing with the "fixed axis of the hinge" and "the axis of the hinge" are meant to read "the fixed axis of rotation of the hinge" and "the axis of rotation of the hinge", respectively, otherwise there would be a 112 sixth paragraph issues, as "a fixed axis of the hinge" and "an axis of the hinge" are not recited earlier in the claim.

58. Claims 1-3 and 5

59. Applicant's arguments filed have been fully considered but they are not persuasive. Examiner disagrees with Applicant's characterization of the apparatus of Zila et al. Contrary to Applicants characterization, the apparatus does have a fixed axis of rotation relative to the chamber body. Additional art (Taguchi et al.) has been relied upon for teaching a vacuum chamber body.

60. Claims 6, 11-13, 15 and 17

61. Applicant's arguments with respect to the Amano and Taguchi references are discussed above. Applicant's additional arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

### ***Conclusion***

62. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


Art Unit: 1763

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore  
Primary Examiner  
Art Unit 1763  
30 August 2006